

CERTIFICATION TEST REPORT

Report Number. : 4791196642-E11V1

Applicant: SAMSUNG ELECTRONICS CO., LTD.

129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,

GYEONGGI-DO, 16677, KOREA

Model: SC-55E, SCG28

FCC ID : A3LSMF956JPN

EUT Description: GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax,

NFC, WPT and UWB

Test Standard(s): FCC 47 CFR PART 15 SUBPART C

Date Of Issue:

2024-05-31

Prepared by:

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Revision History

Rev.	Issue Date	Revisions	Revised By	
V1	2024-05-30	Initial issue	Yeonhee Lim	

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REPORT NO: 4791196642-E11V1 FCC ID: A3LSMF956JPN

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax,

NFC, WPT and UWB

MODEL NUMBER: SC-55E, SCG28

SERIAL NUMBER: R3CX30KWKEL (RADIATED);

DATE TESTED: 2024-05-14 ~ 2024-05-18;

APPLICABLE STANDARDS

STANDARD TEST RESULTS

CFR 47 Part 15 Subpart C Complies

UL KOREA LTD. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL KOREA LTD. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL KOREA LTD. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL KOREA LTD. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL KOREA LTD. By:

Tested By:

Seokhwan Hong Suwon Lab Engineer UL KOREA LTD. Yeonhee Lim Suwon Lab Engineer UL KOREA LTD.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with following methods.

- 1. FCC CFR 47 Part 2.
- 2. FCC CFR 47 Part 15.
- 3. ANSI C63.10-2013.
- 4. KDB 680106 D01 RF Exposure Wireless Charging Apps v03.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro				
☐ Chamber 1(3m semi-anechoic chamber)				
☐ Chamber 2(3m semi-anechoic chamber)				
☐ Chamber 3(3m semi-anechoic chamber)				
☐ Chamber 4(3m Full-anechoic chamber)				
☐ Chamber 5(3m Full-anechoic chamber)				

UL KOREA LTD. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB) 36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

Corrected Reading (dBuV) = Meter Reading (dBuV) + External Cable (dB) + Cableloss (dB) 46.62 dBuV + 9.8 dB + 0.1 dB = 56.52 dBuV

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	2.79 dB
Radiated Disturbance, 30 MHz to 1 GHz	4.07 dB
Radiated Disturbance, 1 GHz to 18 GHz	4.99 dB

Uncertainty figures are valid to a confidence level of 95%.

4.4. **DECISION RULE**

Decision rule for statement(s) of conformity is based on Clause 4.4.3 in IEC Guide 115:2023.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, NFC, WPT and UWB. This test report addresses the wireless low power transmitter(DCD) operational mode.

Representative model	Difference	Derivative model SCG28
SC-55E	Hardware	Same as SC-55E
3C-33E	Software	Different UI

The model SC-55E was used for final testing and is representative of the test results in this report.

5.2. MAXIMUM E-FIELD STRENGTH

Mode 1

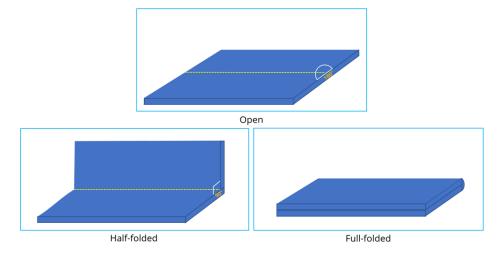
Fundamental Frequency (kHz)	Test Case	E-Field (30m distance) FCC (dBuV/m)
110 - 148	3	8.77

- Mode 2

Fundamental Frequency (kHz)	Test Case	E-Field (30m distance) FCC (dBuV/m)
531 - 593	8	12.02

5.3. PRELIMINARY TEST CONFIGURATIONS

	Power sharing mode	Digitizer
Worst case of antenna axis	Y	Z
Foldable condition	Full-folded	Half-folded



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5.4. WORST-CASE CONFIGURATION AND MODE

Mode 1	Test Case	Description
	1	Charging from EUT to Phone
	2	Charging from EUT(Charging from TA) to Phone
Dower sharing mode	3	Charging from EUT to Phone (Cross position)
Power sharing mode	4	Charging from EUT(Charging from TA) to Phone (Cross position)
	5	Charging from EUT to Wearable device
	6	Charging from EUT(Charging from TA) to Wearable device

Mode 2 Test Case Description		
Distince	7	Scan the S-Pen on the display fo the EUT
Digitizer	8	Scan the S-Pen on the display fo the EUT(with TA)

For radiated test, test case 1/3/5/7, the EUT can operate the power sharing mode when battery level is over 30%. Because test results are not different between fully charged status and battery level 30% status(EUT condition), test were performed fully charged condition.

Also according to current client device's (Phone and Wearable device) battery level, test results are different. Because the test results were worst when the battery level was 1%~20%, tests were performed when the battery level was 1%~20%. (Client device)

For S-pen, both fully charged and non-fully charged condition were investigated, test case 7/8/9 were performed non-fully charged condition as worst case.

During radiated test for test case 1/3/5/7, the EUT didn't connected AC adapter, but for AC line conducted test for all test case was performed with connected with AC adapter.

Test results of case 3 is worst case and Digitizer mode, test results of case 8 is worst, so this test report described test case 3 and test case 8.

In test case 8, button press mode[F2: Button](531 kHz) is worse than hover mode[F1: Pen tip](593 kHz); therefore, only button press mode was reported.

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5.5. MODIFICATIONS

No modifications were made during testing.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT & PERIPHERALS

Support Equipment List						
Description Manufacture Model Serial Number FCC ID						
Charger	SAMSUNG	EP-TA800	R37N9QP4R69DK3	N/A		
Data Cable	SAMSUNG	EP-DN980	GH39-02117A	N/A		

I/O CABLES

I/O Cable List							
Cable No.	Port Identical (Cable Lyne						
1	DC Power	1	С Туре	Shielded	1.0 m	N/A	

TEST SETUP

The EUT is installed in a typical configuration. Charging from EUT.

TEST SETUP DIAGRAM

NOTE: Test case 1/3/5/7, EUT did not connected with Travel adapter(AC Main) in below set-up diagram for radiated test.

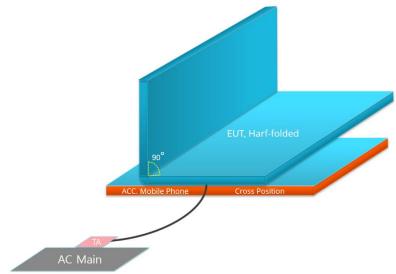
- Test Case1 and 2 : Charging Phone

EUT, Harf-folded

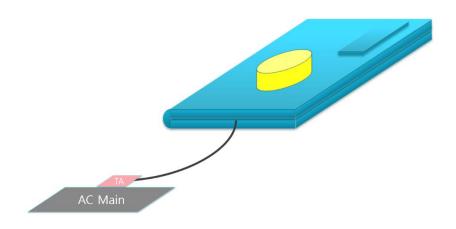
ACC. Mo lile Phone

Test Case 3 and 4 : Charging Phone(Cross position)

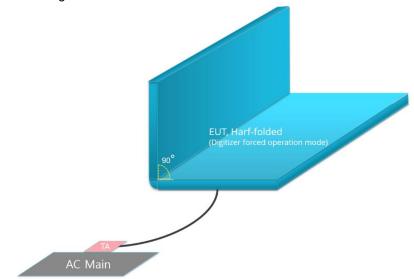
AC Main



Test Case 5 and 6: Charging Wearable device



Test case 7 and 8: Digitizer



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List											
Description	Manufacturer	Model	S/N	Cal Due							
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	2024-08-15							
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	2024-08-15							
Preamplifier, 1000 MHz	Sonoma	310N	341282	2024-07-24							
Preamplifier, 1000 MHz	Sonoma	310N	351741	2024-07-24							
Spectrum Analyzer, 7 GHz	Agilent / HP	N9010A	MY54200580	2024-07-23							
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9030A	MY54170614	2024-07-24							
EMI Test Receive, 3 GHz	R&S	ESR3	101832	2024-07-23							
DC Power Supply	Agilent / HP	E3640A	MY54226395	2024-07-24							
Temperature Chamber	ESPEC	SH-642	93001109	2024-07-24							
LISN	R&S	ENV-216	101836	2024-07-23							
LISN	R&S	ENV-216	101837	2024-07-23							
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	2025-09-06							
UL Software											
Description	Manufacturer	Model	Version								
Radiated software	UL	UL EMC	Ver 9.5								
AC Line Conducted software	UL	UL EMC	Ver 9.5								

7. APPLICABLE LIMITS AND TEST RESULTS

7.1. RADIATED EMISSIONS

TEST PROCEDURE

ANSI C63.10: 2013

The highest clock frequency generated or used in the EUT is 600 kHz therefore the frequency range was investigated from 9 kHz to 30 MHz.

LIMIT

FCC §15.209 (a)

ICES-001 Section 6.2, IC RSS-216 6.2.2, and IC RSS-GEN Sections 8.9 and 8.10.

Frequency	Field Strength	Measurement Distance					
(MHz)	(microvolts/meter)	(m)					
0.009-0.490	2400/F(kHz)	300					
0.490–1.705	24000/F(kHz)	30					
1.705–30.0	30	30					
30–88	100	3					
88 to 216	150	3					
216 to 960	200	3					
Above 960 MHz	500	3					
Note: The lower limit shall apply at the transition frequency.							

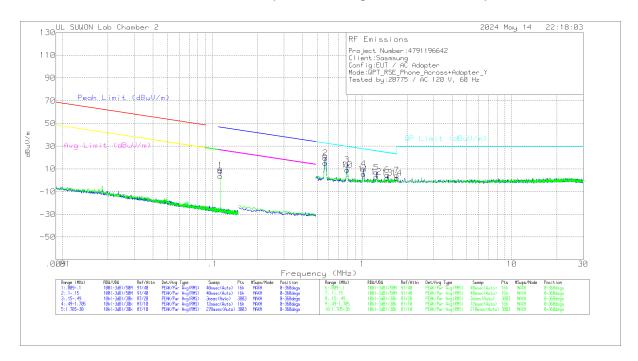
RESULTS

The EUT belongs to Test Case 3 and 8.

Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 300 m open field test site.

Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788 D01.

RADIATED EMISSIONS 9 kHz to 30 MHz(Power sharing mode Test Case 3)



TEST DATA

Trace Markers

[Face on]												
Marker	Frequenc y (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Cable Loss(dB)	Dist Corr 300m(dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**1	.11286	68.67	Pk	20	.1	-80	8.77	46.58	-37.81	26.58	-17.81	0-360

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Cable Loss (dB)	Dist Corr 30m(dB)	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
2	.56733	39.55	Pk	19.9	.1	-40	19.55	32.53	-12.98	0-360
3	.79313	33.64	Pk	19.9	.2	-40	13.74	29.63	-15.89	0-360
4	1.02204	29.98	Pk	19.9	.2	-40	10.08	27.43	-17.35	0-360
5	1.24829	26.88	Pk	19.9	.2	-40	6.98	25.7	-18.72	0-360
6	1.47583	24.63	Pk	19.9	.2	-40	4.73	24.25	-19.52	0-360
7	1.70326	24.19	Pk	20	.2	-40	4.39	23.01	-18.62	0-360

[Face off]												
Marker	Frequenc y (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Cable Loss(dB)	Dist Corr 300m(dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**8	.11286	63.46	Pk	20	.1	-80	3.56	46.58	-43.02	26.58	-23.02	0-360

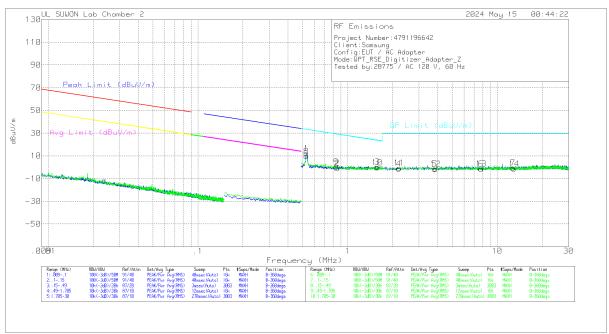
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Cable Loss (dB)	Dist Corr 30m(dB)	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
9	.56733	35.05	Pk	19.9	.1	-40	15.05	32.53	-17.48	0-360
10	.79525	28.99	Pk	19.9	.2	-40	9.09	29.61	-20.52	0-360
11	1.02447	25.45	Pk	19.9	.2	-40	5.55	27.41	-21.86	0-360
12	1.24825	23.05	Pk	19.9	.2	-40	3.15	25.7	-22.55	0-360
13	1.47705	22.06	Pk	19.9	.2	-40	2.16	24.24	-22.08	0-360
14	1.7038	21.66	Pk	20	.2	-40	1.86	23.01	-21.15	0-360

Pk - Peak detector

Note: Radiated test were investigated with three receiving antenna axes: Face-on, Face-off and horizontal (parallel to the ground plane) and the worse orientations of Face-on and Face-off were set for final test.

^{**}Fundamental

RADIATED EMISSIONS 9 kHz to 30 MHz (Digitizer mode Test case 8)



TEST DATA

Trace Markers

Face on

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Cable Loss(dB)	Dist Corr 30m(dB)	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**1	.53165	32.02	Pk	19.9	.1	-40	12.02	33.09	-21.07	0-360
2	.85336	19.11	Pk	19.9	.2	-40	79	28.99	-29.78	0-360
3	1.57969	20.01	Pk	20	.2	-40	.21	23.66	-23.45	0-360
4	2.20453	18.3	Pk	20	.2	-40	-1.5	29.5	-31	0-360
5	3.80678	18.18	Pk	20.1	.3	-40	-1.42	29.5	-30.92	0-360
6	7.79355	18.21	Pk	20	.4	-40	-1.39	29.5	-30.89	0-360
7	12.70398	18.89	Pk	20	.5	-40	61	29.5	-30.11	0-360

Face off

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor(dB/m)	Cable Loss(dB)	Dist Corr 30m(dB)	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
**8	.53165	29.58	Pk	19.9	.1	-40	9.58	33.09	-23.51	0-360
9	.84104	20.11	Pk	19.9	.2	-40	.21	29.12	-28.91	0-360
10	1.5765	19.4	Pk	20	.2	-40	4	23.68	-24.08	0-360
11	2.21395	19.12	Pk	20	.2	-40	68	29.5	-30.18	0-360
12	3.87275	17.98	Pk	20.1	.3	-40	-1.62	29.5	-31.12	0-360
13	7.82183	18.22	Pk	20	.4	-40	-1.38	29.5	-30.88	0-360
14	12.96788	18.08	Pk	20	.5	-40	-1.42	29.5	-30.92	0-360

Pk - Peak detector

**Fundamental

Note: Radiated test were investigated with three receiving antenna axes: Face-on, Face-off and horizontal (parallel to the ground plane) and the worse orientations of Face-on and Face-off were set for final test.

7.2. AC MAINS LINE CONDUCTED EMISSIONS

TEST PROCEDURE

ANSI C63.10: 2013

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

LIMIT

FCC §15.207 (a)

Frequency range	Limits (dBµV)						
(MHz)	Quasi-peak	Average					
0.15 to 0.50	66 to 56*	56 to 46*					
0.50 to 5	56	46					
5 to 30	60	50					
*Decreases with the logarithm of the frequency.							

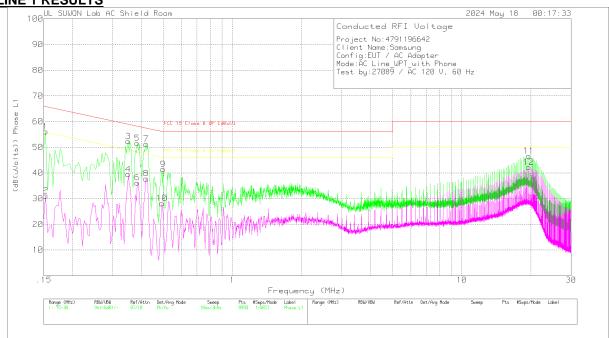
RESULTS

The EUT belongs to Test Case 8 (worst case).

WORST EMISSIONS (Digitizer mode Test Case 8)

Line-L1 .15 - 30MHz





Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1 [dB]	Cable Loss [dB]	Corrected Reading (dB(uVolts))	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
1	.153	46.17	Pk	9.8	.1	56.07	65.84	-9.77	-	-
2	.153	21.29	Αv	9.8	.1	31.19	-	-	55.84	-24.65
3	.351	42.38	Pk	9.8	.1	52.28	58.94	-6.66	-	-
4	.351	29.57	Αv	9.8	.1	39.47	-	-	48.94	-9.47
5	.384	41.66	Pk	9.8	.1	51.56	58.19	-6.63	-	-
6	.384	26.33	Αv	9.8	.1	36.23	-	-	48.19	-11.96
7	.42	41.34	Pk	9.8	.1	51.24	57.45	-6.21	-	-
8	.42	27.91	Αv	9.8	.1	37.81	-	-	47.45	-9.64
9	.498	31.42	Pk	9.9	.1	41.42	56.03	-14.61	-	-
10	.492	18.15	Αv	9.9	.1	28.15	-	-	46.13	-17.98
11	19.587	36.09	Pk	10.2	.3	46.59	60	-13.41	-	-
12	19.587	31.67	Αv	10.2	.3	42.17	-	-	50	-7.83

Pk - Peak detector

Av - Average detection

Quasi-Peak Emissions

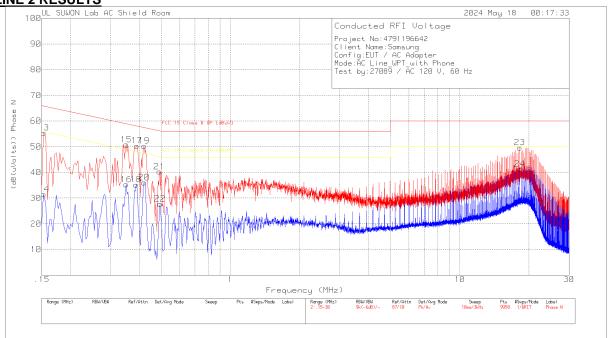
Range 1: Phase L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1 [dB]	Cable Loss [dB]	Corrected Reading (dB(uVolts))	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
.15315	37.65	Qp	9.8	.1	47.55	65.83	-18.28	-	-
.35115	39.38	Qp	9.8	.1	49.28	58.94	-9.66	-	-
.38475	38.59	Qp	9.8	.1	48.49	58.18	-9.69	-	-
.42075	39.27	Qp	9.8	.1	49.17	57.43	-8.26	-	-
19.5863	33.57	Qp	10.2	.3	44.07	60	-15.93	-	-

Qp - Quasi-Peak detector

Line-L2 .15 - 30MHz





Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_N [dB]	Cable Loss [dB]	Corrected Reading (dB(uVolts))	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
13	.153	45.52	Pk	9.8	.1	55.42	65.84	-10.42	-	-
14	.153	21.61	Av	9.8	.1	31.51	-	-	55.84	-24.33
15	.351	40.9	Pk	9.8	.1	50.8	58.94	-8.14	-	-
16	.351	25.39	Αv	9.8	.1	35.29	-	-	48.94	-13.65
17	.39	40.5	Pk	9.8	.1	50.4	58.06	-7.66	-	-
18	.387	25.35	Αv	9.8	.1	35.25	-	-	48.13	-12.88
19	.42	40.38	Pk	9.8	.1	50.28	57.45	-7.17	-	-
20	.42	26.19	Αv	9.8	.1	36.09	-	-	47.45	-11.36
21	.489	30.32	Pk	9.9	.1	40.32	56.18	-15.86	-	-
22	.492	17.76	Αv	9.9	.1	27.76	-	-	46.13	-18.37
23	18.279	39.17	Pk	10.2	.3	49.67	60	-10.33	-	-
24	18.279	30.83	Av	10.2	.3	41.33	-	-	50	-8.67

Pk - Peak detector

Av - Average detection

Quasi-Peak Emissions

Range 2: Phase N .15 - 30MHz

		· · · · · · · · · · · · · · · · · · ·							
Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_N [dB]	Cable Loss [dB]	Corrected Reading (dB(uVolts))	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
.35175	38.26	Qр	9.8	.1	48.16	58.92	-10.76	-	-
.39075	39.04	Qp	9.8	.1	48.94	58.05	-9.11	-	-
.42015	37.63	Qp	9.8	.1	47.53	57.45	-9.92	-	-
18.2798	36.15	Qp	10.2	.3	46.65	60	-13.35	-	-

Qp - Quasi-Peak detector

END OF TEST REPORT

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